The Role of Education and Public Outreach in the Mars Scout Program

Presented at the Mars Scout Program

Concept Study Kickoff Meeting

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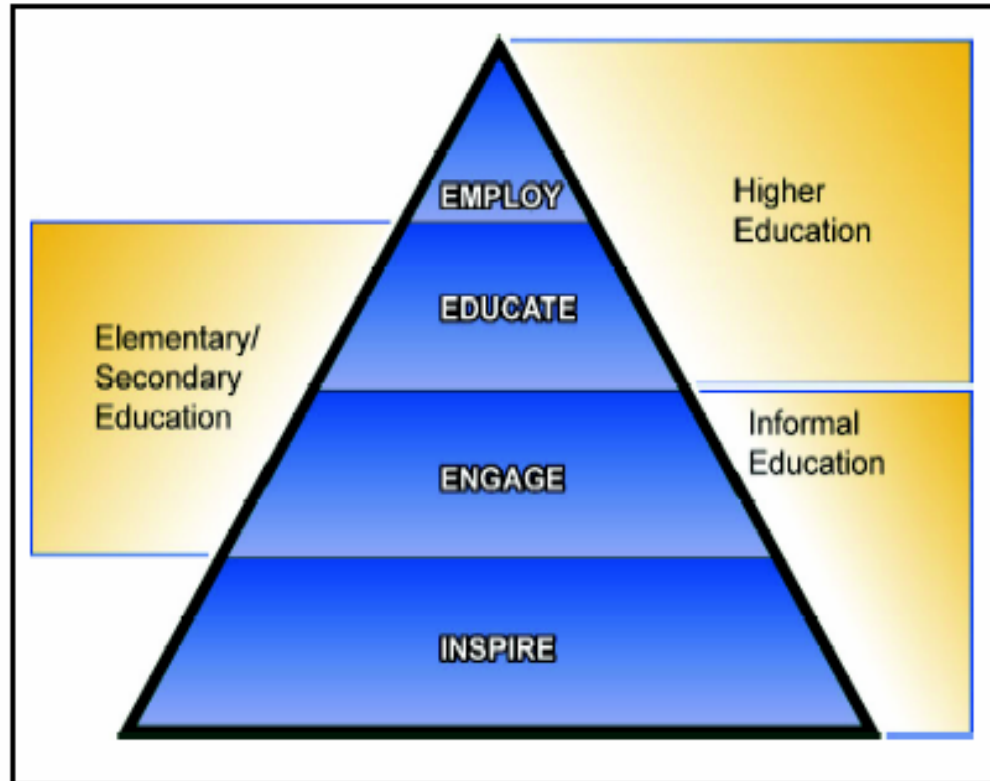# What is NASA Trying To Do in Education and Public Outreach?

NASA Education Goals:

- Strengthen NASA and the Nation's future workforce

- Attract and retain students in STEM disciplines

- Engage Americans in NASA's mission

Addressing these 3 goals has led to the establishment of a multi-faceted portfolio of activities involving many types of partners and carried out in many types of communities across the country.

NASA Education Strategic Framework

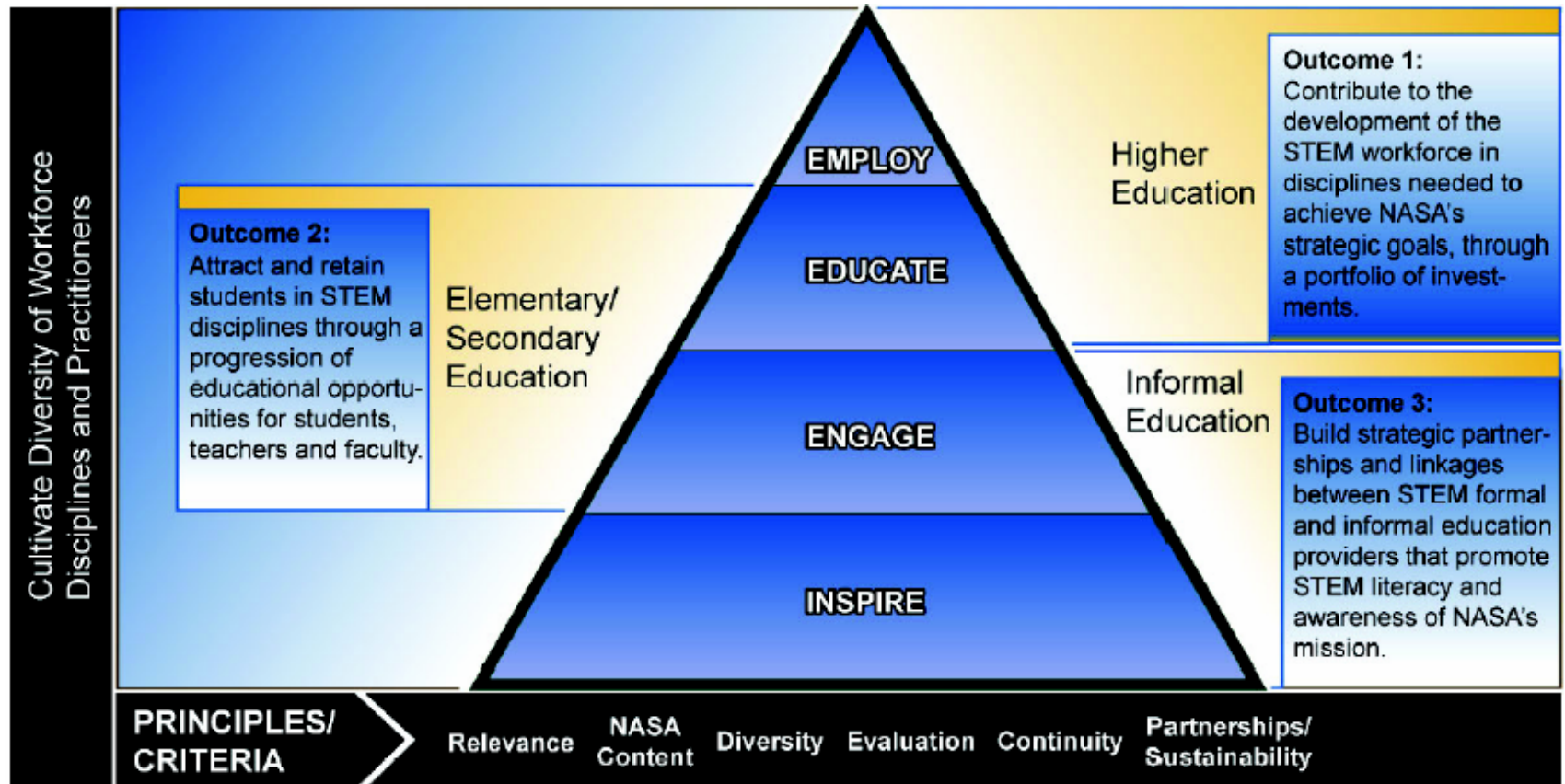Strategic Communications: Education Initiatives
- – Strengthen NASA's and the Nation's future workforce
- – Attract and retain students in STEM disciplines
- – Engage Americans in NASA's mission

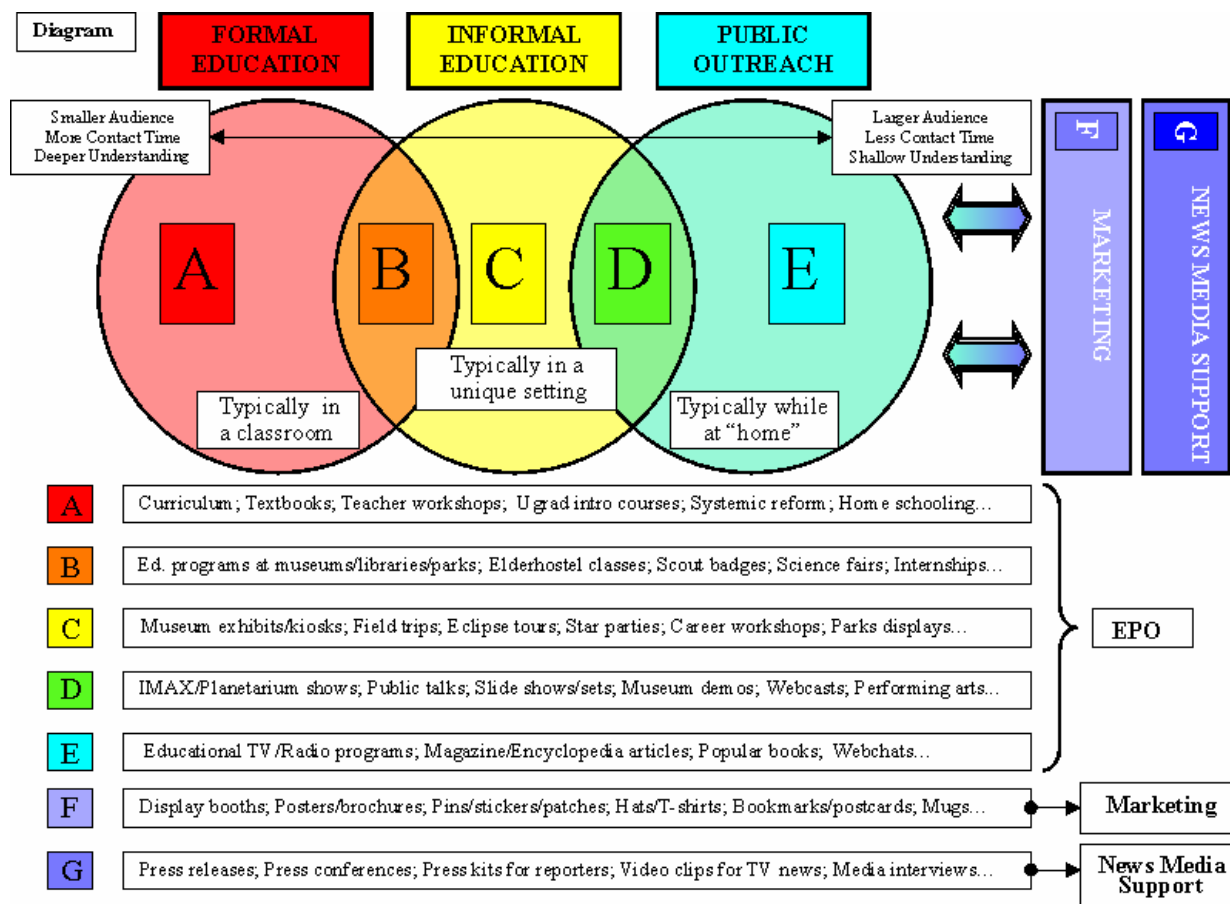# Three Outcomes serve to align all Agency education activities

- **Outcome 1:** Contribute to the development of the STEM workforce in disciplines needed to achieve NASA's strategic goals through a portfolio of investments.

- **Outcome 2:** Attract and retain students in STEM disciplines through a progression of educational opportunities for students, teachers, and faculty.

- **Outcome 3:** Build strategic partnerships and linkages between STEM formal and informal education providers that promote STEM literacy and awareness of NASA's mission.

Outcomes Mapped to the Education Strategic Framework

Education and Public Outreach: Some Important Definitions

Diagram	

FORMAL EDUCATION — **INFORMAL EDUCATION** — **PUBLIC OUTREACH**

Smaller Audience
More Contact Time
Deeper Understanding

Larger Audience
Less Contact Time
Shallow Understanding

A   B   C   D   E

Typically in a unique setting

Typically in a classroom

Typically while at "home"

F MARKETING

G NEWS MEDIA SUPPORT

A	Curriculum; Textbooks; Teacher workshops; Ugrad intro courses; Systemic reform; Home schooling...	
B	Ed. programs at museums/libraries/parks; Elderhostel classes; Scout badges; Science fairs; Internships...	
C	Museum exhibits/kiosks; Field trips; Eclipse tours; Star parties; Career workshops; Parks displays...	EPO
D	IMAX/Planetarium shows; Public talks; Slide shows/sets; Museum demos; Webcasts; Performing arts...	
E	Educational TV/Radio programs; Magazine/Encyclopedia articles; Popular books; Webchats...	
F	Display booths; Posters/brochures; Pins/stickers/patches; Hats/T-shirts; Bookmarks/postcards; Mugs...	Marketing
G	Press releases; Press conferences; Press kits for reporters; Video clips for TV news; Media interviews...	News Media Support

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What is the difference between "Informal Education" and "Public Outreach"?

The First Criteria is the Intent

- In trying to distinguish whether something is informal education or public outreach **the first consideration is - what is the primary intent or goal of the activity**?

Education:

- The **intent** is to increase learning, to educate students, educators and the general public on specific science, technology, engineering or math (STEM) content areas, and to expand the nation's future STEM workforce.

Public Outreach:

- The **intent** is to raise awareness of, or interest in, NASA, its goals, missions and/or programs, and to develop an appreciation for and exposure to science, technology, research and exploration.

Informal Education vs. Public Outreach (Continued)

Having an informal educational 'intent' is not a sufficient condition to be informal education. In order to qualify as 'Informal Education', as opposed to 'Public Outreach', a project has to additionally meet at least two of the following criteria:

1. **Supplemental Materials/Handouts:** Standards based education materials are used to supplement and enrich the experience, visual, or activity.

2. **Staffing:** Staff/facilitators, trained or qualified in STEM/education fields, actively work with participants to further enhance their understanding and increase the educational value of the experience, visual, or activity.

3. **Content:** Educational standards and/or learning objectives play a key role in developing content and/or design and explore topics in-depth

SMD Education and Public Outreach
What Are We Looking For In Scout CSRs?

- A program that is aligned to the NASA SMD E/PO Strategy and Plans
  - The content of the documents is directly reflected in the E/PO Evaluation Factors contained in the Evaluation Factors in the Concept Study Report Guidelines.
- A commitment to adequately fund the proposed E/PO program
  - .25-.5% of the total mission cost through all phases excluding launch vehicles
  - Student Collaboration if included
- A <u>detailed E/PO plan</u> giving a credible story containing specifics and commitments/reality (not rhetoric).
  - See Section 1 of Guidelines and Criteria for the Phase A Concept Study
  - A good case can be laid out in the allowed pages.
  - Letters of support/commitment from E/PO partners are important and can provide addition details.

> **Evaluation will be done as part of the TMC process.**
> **E/PO may play a role in the selection process**.

SMD Education and Public Outreach
What Are We Looking For In Scout CSRs?

- Investigations are required to coordinate their E/PO activities with, and to complement, the overarching "Mars Public Engagement Plan".

- Proposers are encouraged to take advantage of infrastructure investments made by the Mars Exploration Program Public Engagement Office in ongoing educational and public outreach activities for greater reach and cost savings.

- Details on such ongoing programs can be found in "Opportunities to Leverage Mars Public Engagement Plan" in the Mars Scout Library.

SMD Education and Public Outreach
What Should Scout CSRs Discuss?

- E/PO Objectives, planned activities, implementation plans, evaluation plans, PI and team member involvement, educational personnel involvement, partnerships and collaborations with education and public outreach organizations. Organization, management, budget and implementation schedule.

- Coordination with the "Mars Public Engagement Plan"

- Plans for developing and disseminating education/public outreach products and materials, for contributing to the training of underserved and/or underutilized groups in science and technology, and for coordination of the planned E/PO program with the existing SMD E/PO program.

- Letters of support/commitment from partners and resumes of key E/PO personnel should be included in the appendices to the proposal.

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Student Collaborations

- The Concept Study for a Student Collaboration must fully describe its educational impact in the context of workforce development, as well as technical, maturity, processes, and mission risks. It must provide detailed plans for implementing the SC activities, including identification of and formal commitment from partner institutions, development schedule of the SC, decision points for determining SC readiness.

- The Student Collaboration and the balance of the E/PO effort are evaluated independently and both must address the E/PO Evaluation Factors.

Proposal Evaluation Criteria

- Intrinsic Merit
  - Quality, Scope, Realism, and Appropriateness
  - Customer Needs Focus
  - Partnerships/Leverage/Sustainability
  - Evaluation
- Relevance to NASA
  - Content
  - Pipeline
  - Diversity
- Cost

Potential Problem Areas for Intrinsic Merit

- Is the proposed work and target audience appropriate to the program opportunity?

- Is there evidence of a real need expressed by the target audience? (Surveys, papers, letters, etc.)

- Is the scope appropriate for the amount of funding requested?

- Does the proposal and the content target an appropriate audience and age level?

- Is the proposal internally consistent - is the same target audience used throughout, etc.

Potential Problem Areas for Intrinsic Merit

- Are the team members (scientists)/engineers/technologists/etc.) genuinely involved?

- Is there evidence of actual partnerships?   (Names of individuals to contact, letters, etc.)

- Are the personnel identified and qualified to do the tasks they have been assigned? (An individual familiar with the target audience should be involved with the effort)

- Are appropriate evaluation techniques used and what is done with the information? What is the impact of the effort?

Potential Problem Areas for Relevance

- Are appropriate education standards cited for "formal" education programs?

  (If it's a middle school program - identify specific middle school standards, etc.)

- Is the content target group and age appropriate?

Potential Problem Areas for Cost

- Amount of effort not specified or unreasonable

- Source of cost sharing not identified or not included in budget.

- Insufficient justification of activities and costs.

Highly Rated Studies
(It the Details!)

- Examples:
  - If you are going to do a teacher workshop, indicate how many teachers, how many contact hours, the content, how you will identify and select the teachers.
  - If you are going to hire an assistant, what are the qualifications and how will the selection be done.
  - How are you engaging/reaching the target audience? E.g. advertising, free admissions, stipends, etc.

Details

- If you are supplying materials, specify what you are supplying
- Is there cost sharing either in-kind or cash? Who is providing it and is there a commitment?
- Costs are justified based on documented experience for similar projects (how much effort does it take to do a 1 day workshop)
- Costs are justified based on documented sources (how much does a book cost)

# SMD Education and Public Outreach Sources of Information

The "SMD EPO Explanatory Guide"

- Describes in great detail what the Evaluation Factors mean
- Contains answers to "Frequently Asked Questions"
- Was developed to ensure that E/PO efforts are prepared and evaluated on a consistent basis
- Version 1.0 (October 2006) will be used for this phase.

Space Science E/PO Broker/Facilitator Regions

S2N2

NESSIE

DU

MARSSB

SSI

SERCH

DC

SCORE

Puerto Rico

Virgin Islands
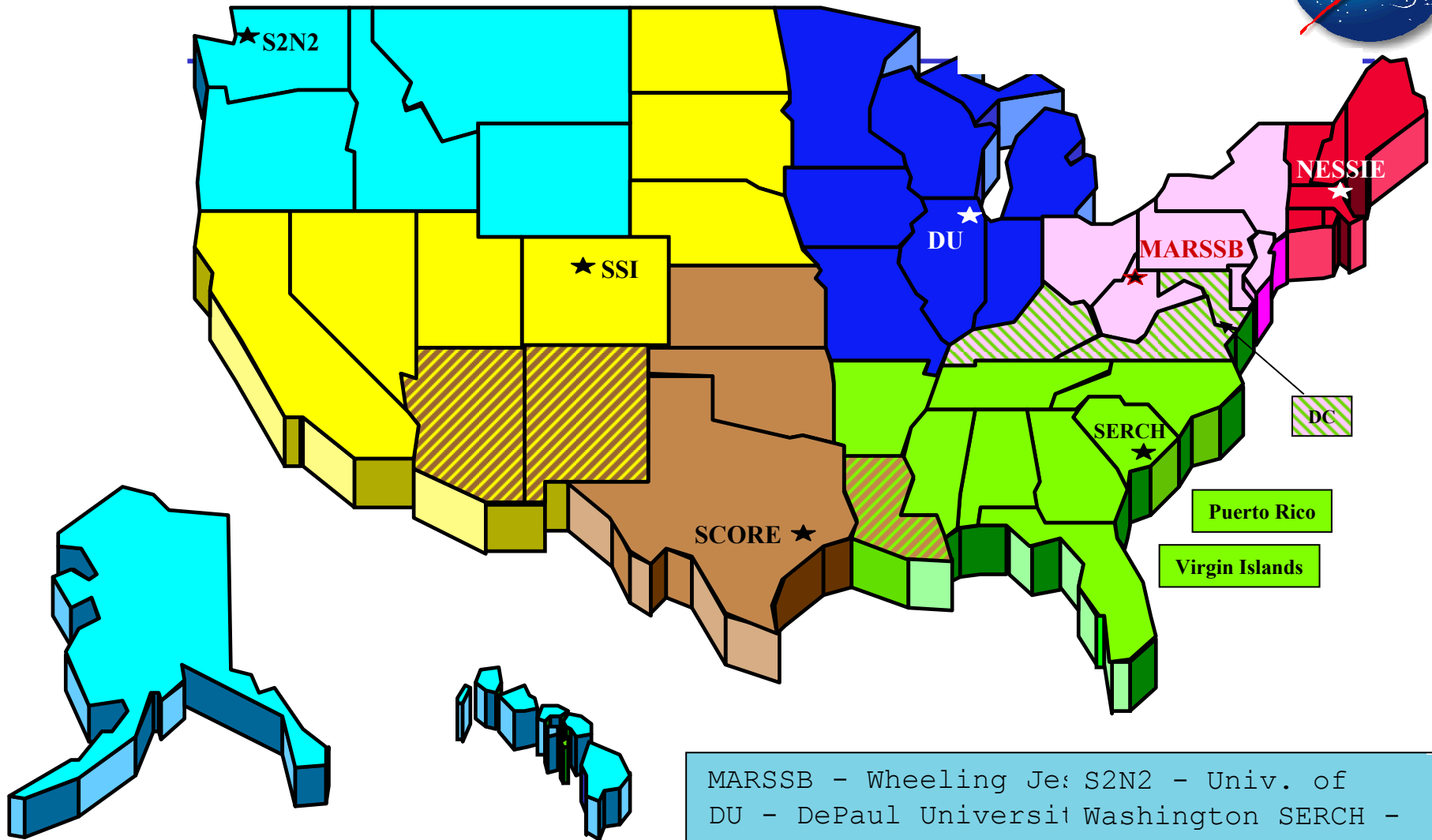
MARSSB - Wheeling Je: S2N2 - Univ. of
DU - DePaul Universit Washington SERCH -
LPI - Lunar & Planeta College of
NESSIE - Museum of Sc Charleston

(cross-hatches indicate SSI - Space Science
shared regions) Inst.

SMD Education and Public Outreach Sources of Assistance

- Call your local Broker/Facilitator or the appropriate SMD Education Forum
    - <u>The Support Network is there to help, but is not responsible for preparing the E/PO portion of your Investigation</u>
- In accord with the operating principles developed by the Support Network, discussions with individual Teams will be treated as proprietary
- SN contact information is available through the SMD E/PO Homepage
- Questions about the SMD E/PO Program may be directed to the SMD E/PO Program Officer.

Note: SMD plans to replace the Brokers and Forums with Division Support Groups by July 2007. DSGs will provide essentially equivalent support to missions.

SMD Education and Public Outreach
Some Summary Observations

- E/PO will be an integral element of the Scout evaluation and selection process
  - E/PO has made a difference in previous AO selections
- SMD has seen a significant evolution in the level of maturity, ambition and sophistication in mission E/PO programs over the past several years
  - We have high expectations for Scout E/PO.
- Resources are available to help the PI's in developing their proposals
  - Contact the Forums and Broker/Facilitators for help
  - Read the "Explanatory Guide" and other available documentation
- Treat E/PO with the same rigor and professionalism that you treat the science and engineering aspects of your Concept Study Report.